

WHAT IS CLAIMED IS:

1. A method of determining branch metric values in a detector, the method comprising:
 - (a) receiving time variant signal samples; and
 - (b) computing the branch metric values as a function of transition jitter statistics corresponding to the signal samples.
2. The method of claim 1 wherein the transition jitter statistics comprise transition jitter variance.
3. The method of claim 1 wherein the computing step (b) further comprises computing the branch metric values as a function of wide-band additive noise corresponding to the signal samples.
4. The method of claim 1 wherein the computing step (b) further comprises computing the branch metric values as a function of hypothesized data sequences corresponding to trellis branches of the detector.
5. The method of claim 1 wherein the computing step (b) further comprises computing the branch metric values as a function of an equalized transition response derivative of the signal samples.
6. The method of claim 1 wherein a derivation of transition jitter statistics is carried out from a Bayesian viewpoint, wherein transition jitter is treated as a random, nonlinear, nuisance parameter.
7. The method of claim 1 wherein the detector is a hard decision detector.

8. The method of claim 1 wherein the detector is a soft decision detector.
9. The method of claim 1 wherein the detector is a part of a read channel of a disc drive data storage system.
10. The method of claim 1 wherein the detector is a post processor, which refines signals output by a primary detector.
11. A detector comprising:
branch metric calculation modules configured to determine branch metric values by:
 - (a) receiving time variant signal samples; and
 - (b) computing the branch metric values as a function of transition jitter statistics corresponding to the signal samples.
12. The apparatus of claim 11 wherein the transition jitter statistics comprise transition jitter variance.
13. The apparatus of claim 11 wherein the branch metric calculation modules are further configured to carry out the computing step (b) by computing the branch metric values as a function of wide-band additive noise corresponding to the signal samples.
14. The apparatus of claim 11 wherein the branch metric calculation modules are further configured to carry out the computing step (b) by computing the branch metric values as a function of hypothesized data sequences corresponding to trellis branches of the detector.

15. The apparatus of claim 11 wherein the branch metric calculation modules are further configured to carry out the computing step (b) by computing the branch metric values as a function of an equalized transition response derivative of the signal samples.
16. The apparatus of claim 11 wherein a derivation of transition jitter statistics is carried out from a Bayesian viewpoint, wherein transition jitter is treated as a random, nonlinear, nuisance parameter.
17. The apparatus of claim 11 wherein the detector is a hard decision detector.
18. The apparatus of claim 11 wherein the detector is a soft decision detector.
19. The apparatus of claim 11 wherein the detector is a part of a read channel of a disc drive data storage system.
20. A detector comprising:
means for computing branch metric values as a function of transition jitter statistics corresponding to signal samples received by the detector.